

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3554

THE BALTIMORE AND OHIO RAILROAD COMPANY

IN RE ACCIDENT

AT WJ TOWER, NEAR WILMINGTON, DEL., ON

FEBRUARY 5, 1954



SUMMARY

Date: February 5, 1954

Railroad: Baltimore and Ohio

Location: WJ Tower, near Wilmington, Del.

Kind of accident: Side collision

Equipment involved: Locomotive : Passenger train

Engine numbers: Diesel-electric : Diesel-electric  
unit 419 units 59A and 59X

Consist: : 13 cars

Speeds: Standing : 75 m. p. h.

Operation: Signal indications

Tracks: Double; 0°30' curve; 0.34 percent ascending grade westward

Weather: Clear

Time: 9:54 a. m.

Casualties: 13 injured

Cause: Locomotive fouling main track immediately in front of approaching train



INTERSTATE COMMERCE COMMISSION

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REPORT NO. 3554

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS  
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

THE BALTIMORE AND OHIO RAILROAD COMPANY

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March 2, 1954

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Accident at WJ Tower, near Wilmington, Del., on February 5,  
1954, caused by a locomotive fouling a main track  
immediately in front of an approaching train.

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REPORT OF THE COMMISSION<sup>1</sup>

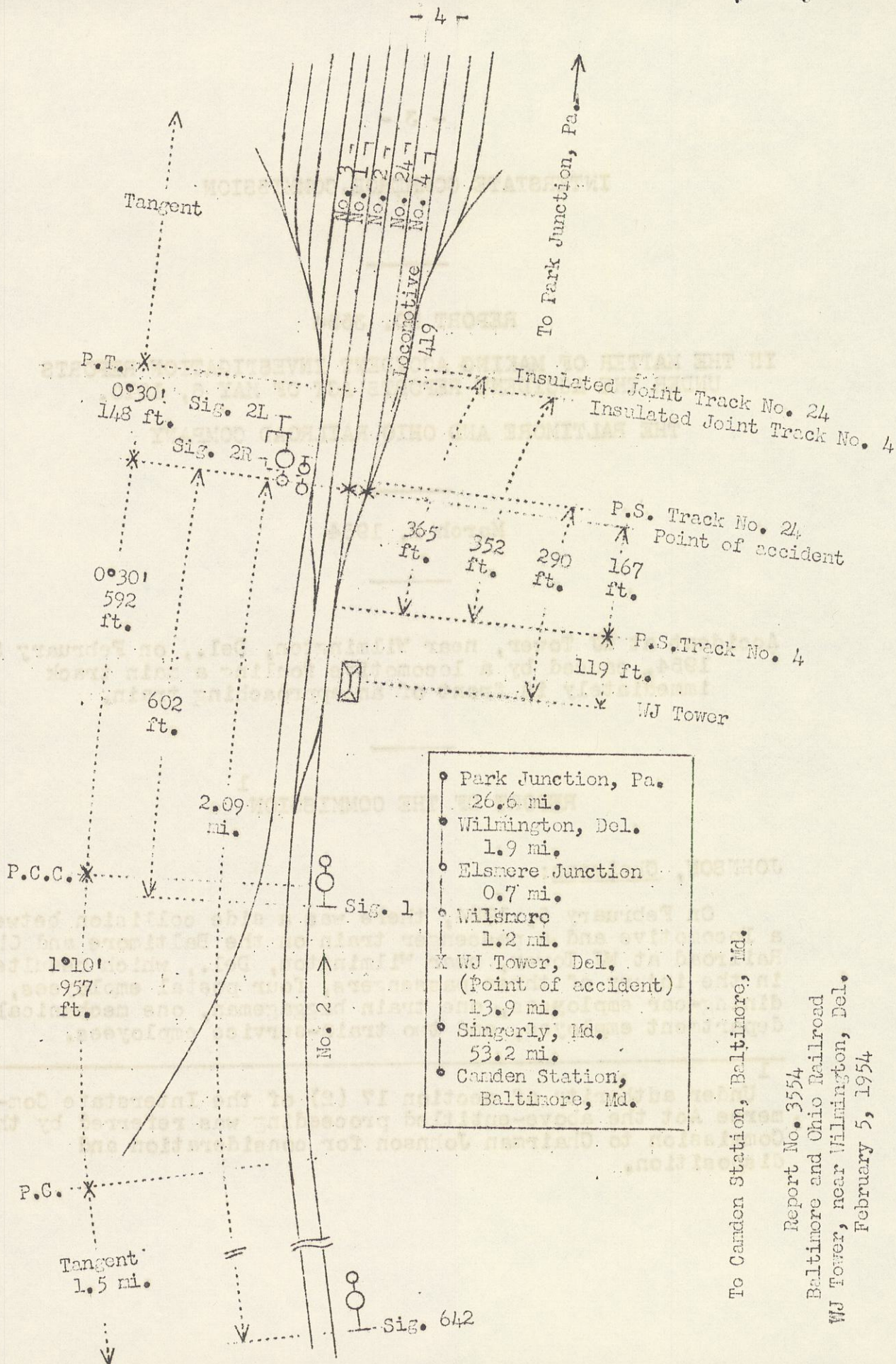
JOHNSON, Chairman:

On February 5, 1954, there was a side collision between a locomotive and a passenger train on the Baltimore and Ohio Railroad at WJ Tower, near Wilmington, Del., which resulted in the injury of three passengers, four postal employees, two dining-car employees, one train baggageman, one mechanical department employee, and two train-service employees.

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<sup>1</sup> Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Chairman Johnson for consideration and disposition.





To Camden Station, Baltimore, Md.

Report No. 3554

Baltimore and Ohio Railroad

WJ Tower, near Wilmington, Del.

February 5, 1954



Location of Accident and Method of Operation

This accident occurred on that part of the Baltimore Division extending between Park Junction, Pa., and Camden Station, Baltimore, Md., 97.5 miles. In the vicinity of the point of accident this is a double-track line, over which trains moving with the current of traffic are operated by signal indications supplemented by an intermittent inductive automatic train-stop system. From north to south the main tracks are designated as No. 1, westward, and No. 2, eastward. At Wilsmere, Del., 29.2 miles west of Park Junction, yard tracks parallel track No. 1 on the north and track No. 2 on the south. These yard tracks extend between Elsmere Junction, 0.7 mile east of Wilsmere, and WJ Tower, 1.2 miles west of Wilsmere. At the west end of the yard the track which parallels track No. 1 on the north is designated as track No. 3. The two tracks which parallel track No. 2 on the south are designated from north to south as track No. 24 and track No. 4. Track No. 4 converges with track No. 24 and with track No. 2 at switches located, respectively, 290 feet and 119 feet east of WJ Tower. Immediately west of WJ Tower a trailing-point crossover connects tracks Nos. 1 and 2. Another crossover, which is located opposite the west switch of track No. 4, connects tracks Nos. 1 and 3. This crossover is trailing-point for west-bound movements on track No. 1. The accident occurred west of the fouling point between tracks Nos. 2 and 4, and 167 feet east of the point-of-switch at the west end of track No. 4. From the east on the main tracks there are, in succession, a tangent over 1,000 feet in length, and a  $0^{\circ}30'$  curve to the left 148 feet to the point of accident and 592 feet westward. From the west there are, in succession, a tangent 1.5 miles in length, a  $1^{\circ}10'$  curve to the right 957 feet, and the curve on which the accident occurred. At the point of accident the grade on track No. 4 is 0.05 percent ascending westward, and the grade on track No. 2 is 0.34 percent descending eastward.

Automatic signal 642 and semi-automatic signal 1, governing east-bound movements on track No. 2, are located, respectively, 2.09 miles and 602 feet west of the point of accident. These signals are of the color-position-light type and are approach lighted. Aspects applicable to this investigation and the corresponding indications and names are as follows:



<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
642 1	Two green lights in vertical position under one white light	Proceed.	Clear.
642 1	Two yellow lights in diagonal position to right. under one white light	Proceed, prepared to stop at next signal. Train exceeding medium speed when indi- cation is seen must take action at once to reduce to medium speed, or slower if necessary.	Approach.
1	Two red lights in horizontal position	Stop.	Stop.

The controlling circuits are so arranged that when the route is lined for an east-bound movement on track No. 2 and the blocks of both signals are clear, each signal indicates Proceed. When the track section immediately east of signal 1 is occupied, signal 642 indicates Approach and signal 1 indicates Stop.

The shunt fouling circuits on tracks Nos. 24 and 4 extend distances of 352 feet and 365 feet, respectively, east of the main-track switch. The joint bars at the insulated joints at the ends of these circuits are painted white.

The main-track switches and the east switch of the crossover between tracks Nos. 1 and 3 at WJ Tower are operated manually by the operator. The switch stands are of the low-stand ground-throw type and are electrically locked. Levers are provided which control signal 1 and also signal 2L, governing west-bound movements on track No. 1, and signal 2R, governing west-bound movements on track No. 3. The latter two signals are located approximately 290 feet east of WJ Tower. The circuits are so arranged that when the levers are in normal position each controlled signal displays its most restrictive aspect.



Under this condition the switches may be operated. While a lever is in position to cause a signal to display an aspect to proceed, all switches in the route governed by that signal are locked. After a signal displays an aspect to proceed, the position of a switch in the route governed by that signal cannot be changed until the lever controlling the signal has been placed in position to cause the signal to display its most restrictive aspect, a time interval of 4 minutes has elapsed, and the lever has then been placed in full normal position.

This carrier's operating rules read in part as follows:

B. Employes must know and obey the rules and Special Instructions. \* \* \* They must assist each other in carrying out the rules and Special Instructions \* \* \*

#### DEFINITIONS

Medium Speed--A speed not exceeding thirty (30) miles per hour.

Restricted Speed--Proceed, prepared to stop short of: train, obstruction, improperly lined switch or broken rail.

13 (A). Where movement of trains is governed by hand signals given by switchtenders, the following indications will govern:

Green signals for eastward or northward movements.

Yellow signals for westward or southward movements.

104. \* \* \*

Engines or trains moving out of tracks must not foul clearance point until switch is properly lined.

\* \* \*

Firemen.

887. They must keep a vigilant lookout; observe all signals and position of switches; \* \* \* When necessary, they must call attention of the engineer to any condition affecting the movement of their train.

\* \* \*



Timetable special instructions read in part as follows:

11. HAND SIGNALS AND FLAGGING.

\* \* \*

Switchtenders handling main track switches at following locations:

\* \* \*

WJ Tower (Operator).

\* \* \*

16. YARDS.

\* \* \*

THE FOLLOWING TRACKS ARE YARD RUNNING TRACKS:

WJ Tower to Elsmere Junction--

No. 4 track--Second track south of No. 2 track between WJ Tower and Wilsmere. First track south of eastbound yard between Wilsmere and Elsmere Junction, eastward.

Movements against the current of traffic will not be made except on written instructions from Yardmaster at Wilsmere.

\* \* \*

The maximum authorized speed for passenger trains on track No. 2 is 80 miles per hour.

Description of Accident

About 9:45 a. m. the yardmaster at Wilsmere delivered to the crew of Diesel-electric unit 419 written instructions reading as follows:

Eng 419 use #4 Track from Scale House  
to WJ Tower Track protected by operator  
at WJ Tower



Locomotive 419 was assigned to yard service at Willsmere. It departed from a point on track No. 4 approximately 3,775 feet east of WJ Tower, proceeded westward on track No. 4, and stopped with the front end west of the fouling point between tracks Nos. 2 and 4, and 167 feet east of the point-of-switch at the west end of track No. 4. Immediately afterward the end of the front bumper beam on the right side of the locomotive was struck by the end of the pilot beam on the right side of the first Diesel-electric unit of No. 2.

No. 2, an east-bound first-class passenger train, consisted of Diesel-electric units 59A and 59X, coupled in multiple-unit control, one baggage-mail car, one combination baggage-passenger car, five coaches, one dining car, and five sleeping cars, in the order named. All cars were of all-steel construction. This train passed Singerly, Md., 13.9 miles west of WJ Tower and the last open office, at 9:43 a. m., 5 minutes late, passed signal 642, which indicated Proceed, passed signal 1, which indicated Stop, and while moving at a speed of 75 miles per hour it struck yard locomotive 419.

Yard locomotive 419 stopped on track No. 4 with the front end 171 feet east of the point of accident. It was not derailed but was considerably damaged. Both Diesel-electric units, the first to the ninth cars, inclusive, and the front truck of the tenth car of No. 2 were derailed to the north. The train stopped with the front of the locomotive 938 feet east of the point of accident. The derailed equipment remained upright and approximately in line with the track. A separation occurred between the third and the fourth cars. Both Diesel-electric units were badly damaged, the first to the ninth cars, inclusive, were considerably damaged, and the tenth car was slightly damaged.

The yard conductor of locomotive 419 and the flagman of No. 2 were injured.

The weather was clear at the time of the accident, which occurred at 9:54 a. m.

Diesel-electric unit 419 is of the 1000-horsepower switcher type.



### Discussion

On the day of the accident an extra yard crew was performing switching service at Wilsmere with locomotive 419. Shortly after 9:30 a. m. this crew coupled the locomotive to the west end of a car on a track north of the main tracks, entered track No. 3, crossed from track No. 3 to track No. 4 at WJ Tower, and pushed the car eastward on track No. 4 to a point approximately 3,775 feet east of WJ Tower. After the car was detached, the crew received written instructions from the yardmaster to return to WJ Tower on track No. 4. They intended to cross from track No. 4 to track No. 3 at WJ Tower and then resume switching operations on the yard tracks north of the main tracks.

As yard locomotive 419 was moving westward on track No. 4 the speed was about 10 miles per hour, as estimated by the engineer. The engineer and the fireman were in their respective positions in the control compartment, the yard conductor was seated either on the fireman's seat box or on the fireman's foot rest, and two yard brakemen were seated between the engineer and the fireman. The yard brakemen were facing toward the rear. The locomotive was headed westward, and the control compartment was at the east end of the unit. The engineer said that his side window was closed and he was maintaining a lookout ahead from the front window of the control compartment. He said that, as the locomotive approached the end of track No. 4, he reduced the speed and prepared to stop short of the insulated joints at the end of the shunt fouling circuit. He intended to remain at that point until the switches were lined for the movement of his locomotive and he received a hand signal to proceed. He said that the white joint bars at the insulated joints are not easily seen from the level of the control compartment, and that he failed to see them as the locomotive approached. The locomotive entered the shunt fouling circuit and overran the fouling point between tracks Nos. 4 and 2 before the engineer realized that he had passed the insulated joints. At approximately the same time that the engineer became aware that the locomotive was fouling track No. 2, the yard conductor called that train No. 2 was approaching. The engineer immediately stopped the locomotive, placed the reverser in position for backward motion, and opened the throttle. The collision occurred before the locomotive could be started. The fireman said that he was not entirely familiar with the physical characteristics and the method of



operation in the vicinity of WJ Tower. He said that after he read the yardmaster's instructions authorizing the westward movement on track No. 4 he had in mind that the locomotive was authorized to proceed directly to WJ Tower. For this reason he was not concerned with the location of the clearance point on track No. 4 and did not warn the other members of the crew when the locomotive fouled track No. 2. The yard conductor said that as the locomotive moved westward on track No. 4 he was studying a switch list and was not aware of the location of the locomotive until he looked up and saw that it was fouling track No. 2 and that train No. 2 was approaching. He immediately called a warning to the engineer. The yard brakemen were seated in positions from which they could not see the track ahead. They were not aware of the location of the locomotive until immediately before the collision occurred.

The operator at WJ Tower said that before locomotive 419 crossed from track No. 3 to track No. 4 he received instructions from the yardmaster that after the locomotive entered track No. 4 he was not to permit another east-bound movement on that track until after the locomotive returned to WJ Tower. When he received a report that No. 2 had passed Singlerly, the locomotive had entered track No. 4 and the switches had been restored to position for movement on track No. 2. The operator then placed the controlling lever in position to lock the switches and to cause signal 1 to display an aspect to proceed. A short time later he saw locomotive 419 returning on track No. 4. He expected that the locomotive would stop east of the clearance point on track No. 4, and remain there until the switches had been lined for movement from track No. 4 to track No. 1 and he had given a hand signal. As No. 2 was closely approaching signal 1, the visual indicators in the operator's office indicated that the indication of signal 1 changed from Proceed to Stop. The operator then saw that locomotive 419 had passed the clearance point on track No. 4. He immediately ran outside and gave stop signals. The collision occurred a few seconds later.

As No. 2 was approaching the point where the accident occurred the speed was about 80 miles per hour. The engineer and the fireman were maintaining a lookout ahead from the control compartment at the front of the locomotive. The members of the train crew were in various locations in the cars of the train. The brakes of the train had been tested and had functioned properly when used en route. The enginemen said that signal 642 indicated Proceed. Because of curvature



of the track, the view of signal 1 from an approaching east-bound locomotive is restricted to a distance of 820 feet. When No. 2 reached a point from which the enginemen could obtain a view of this signal, they observed that the signal indicated Proceed. When locomotive 419 entered the shunt fouling circuit at the west end of track No. 4, the indication of signal 1 changed from Proceed to Stop. The engineer of No. 2 saw the indication of the signal change, and he said he thought that at this time his locomotive was about 600 feet west of the signal. He immediately made an emergency application of the brakes. According to the tape of the speed recording device, the speed was 79 miles per hour when the brake application became effective and had been reduced to 75 miles per hour when the collision occurred.

The painted joint bars near the end of track No. 4 mark the insulated joints at the end of the shunt fouling circuit. There is nothing provided to indicate the actual clearance point. In the instant case the engineer of locomotive 419 said that he intended to stop short of the painted joint bars and that when he failed to see them he overran the fouling point between tracks Nos. 2 and 4. The carrier should give consideration to providing means of more clearly indicating the locations of clearance points at switches where other protection is not provided.

#### Cause

This accident was caused by a locomotive fouling a main track immediately in front of an approaching train.

Dated at Washington, D. C., this second day of March, 1954.

By the Commission, Chairman Johnson.

(SEAL)

GEORGE W. LAIRD,

Secretary.